

What is Claimed is

1. A light transmission tube including a tubular clad and a core section having a higher refractive index than that of the tubular clad, characterized in that a belt-like reflecting layer is formed between the tubular clad and the core section, extending in the longitudinal direction of the tubular clad, in a manner such that a light passing through the core section is reflected and scattered by the reflecting layer and then emitted from an outer surface area of the tubular clad, which outer surface area is located opposite to one side of the tubular clad where the reflecting layer has been formed.

2. The tube according to claim 1, wherein a reflecting layer consisting of light scattering particles is formed between the tubular clad and the core section.

3. The tube according to claim 1, wherein a reflective protection layer is formed on the outer surface of the tubular clad to cover the reflecting layer formed between the tubular clad and the core section.

4. The tube according to claim 1, wherein a cross section perpendicular to the longitudinal direction of the

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~~tube is one of a circular shape and an oval shape.~~

5. The tube according to claim 1, wherein the clad is a tube made of a fluorine-contained polymer, the core section is made of an acrylic polymer.

6. The tube according to claim 1, wherein the clad is made of a (meta)acrylic polymer, the core section is made of a polystyrene, a polycarbonate, or a styrene-(meta)acryl copolymer, the reflecting layer is made of a (meta)acryl polymer containing a white color pigment or a light scatterring material.

7. A method of manufacturing a light transmission tube, comprising:

dispersing an amount of light scatter~~ing~~ particles in a core section formation solution containing a monomer to be polymerized to form a core section;

introducing the core section formation solution containing dispersed light scatter~~ing~~ particles into ~~the~~ a tubular clad;

placing the tubular clad containing the core section formation solution in a horizontal position so as to cause the light scatter~~ing~~ particles to precipitate on to a lower surface within the clad;

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then, at <sup>a</sup> ~~the~~ same moment, the core formation material is extruded to be formed into a solid cylindrical core member, the reflecting layer formation material is extruded into a belt-like reflecting layer formed on <sup>an</sup> ~~the~~ outer surface of the solid cylindrical core member, the clad formation material is extruded into a tubular member

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covering the solid cylindrical core member and the belt-like reflecting layer, thereby forming a belt-like reflecting layer which is located between the tubular clad and the core section in the longitudinal direction thereof.

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10. The method according to claim 9, wherein the clad formation material is a ~~/meta/~~acryl polymer, the core section formation material is ~~/~~ polystyrene, ~~/~~ polycarbonate, or a styrene-~~/meta/~~acryl copolymer, the reflecting layer formation material is a ~~/meta/~~acryl polymer containing a white color pigment.

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11. The method according to claim 7, wherein a reflective protection layer is formed <sup>an</sup> on ~~the~~ outer surface of the tubular clad to cover the reflecting layer formed between the tubular clad and the core section.

12. ~~The light transmission tube according to claim 1, wherein a plurality of belt-like reflecting layers are formed, a light passing through the core section is caused to emit from side surface areas of the tubular clad in a plurality of directions.~~

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13. A method of manufacturing a light transmission tube <sup>wherein</sup> ~~of claim 1, characterized in that:~~

a a multi-<sup>material</sup>~~color~~ extrusion molding machine having three crew sections is used;

a core formation material, a clad formation material, and a reflecting layer formation material are simultaneously introduced into the extrusion molding machine;

then, at the same moment, the core formation material is extruded to be formed into a solid cylindrical core member, the reflecting layer formation material is extruded into ~~a plurality of~~ belt-like reflecting layers<sup>1</sup> formed on the outer surface of the solid cylindrical core member, the clad formation material is extruded into a tubular member covering the solid cylindrical core member and ~~the plurality of~~ the belt-like reflecting layers<sup>1</sup>.

14. The light transmission tube according to claim 1, wherein the belt-like reflecting layer is formed into a spiral configuration, so that a light passing through the core section is caused to emit from side surface areas of the tubular clad in a spiral manner.

a 15. A method of manufacturing a light transmission tube of claim <sup>13</sup> ~~14~~, wherein ~~characterized in that:~~

a multi-color ~~extrusion molding machine having three crew sections is used;~~

~~a core formation material, a clad formation material,~~

|  | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | 2041 | 2042 | 2043 | 2044 | 2045 | 2046 | 2047 | 2048 | 2049 | 2050 | 2051 | 2052 | 2053 | 2054 | 2055 | 2056 | 2057 | 2058 | 2059 | 2060 | 2061 | 2062 | 2063 | 2064 | 2065 | 2066 | 2067 | 2068 | 2069 | 2070 | 2071 | 2072 | 2073 | 2074 | 2075 | 2076 | 2077 | 2078 | 2079 | 2080 | 2081 | 2082 | 2083 | 2084 | 2085 | 2086 | 2087 | 2088 | 2089 | 2090 | 2091 | 2092 | 2093 | 2094 | 2095 | 2096 | 2097 | 2098 | 2099 | 2100 | 2101 | 2102 | 2103 | 2104 | 2105 | 2106 | 2107 | 2108 | 2109 | 2110 | 2111 | 2112 | 2113 | 2114 | 2115 | 2116 | 2117 | 2118 | 2119 | 2120 | 2121 | 2122 | 2123 | 2124 | 2125 | 2126 | 2127 | 2128 | 2129 | 2130 | 2131 | 2132 | 2133 | 2134 | 2135 | 2136 | 2137 | 2138 | 2139 | 2140 | 2141 | 2142 | 2143 | 2144 | 2145 | 2146 | 2147 | 2148 | 2149 | 2150 | 2151 | 2152 | 2153 | 2154 | 2155 | 2156 | 2157 | 2158 | 2159 | 2160 | 2161 | 2162 | 2163 | 2164 | 2165 | 2166 | 2167 | 2168 | 2169 | 2170 | 2171 | 2172 | 2173 | 2174 | 2175 | 2176 | 2177 | 2178 | 2179 | 2180 | 2181 | 2182 | 2183 | 2184 | 2185 | 2186 | 2187 | 2188 | 2189 | 2190 | 2191 | 2192 | 2193 | 2194 | 2195 | 2196 | 2197 | 2198 | 2199 | 2200 | 2201 | 2202 | 2203 | 2204 | 2205 | 2206 | 2207 | 2208 | 2209 | 2210 | 2211 | 2212 | 2213 | 2214 | 2215 | 2216 | 2217 | 2218 | 2219 | 2220 | 2221 | 2222 | 2223 | 2224 | 2225 | 2226 | 2227 | 2228 | 2229 | 2230 | 2231 | 2232 | 2233 | 2234 | 2235 | 2236 | 2237 | 2238 | 2239 | 2240 | 2241 | 2242 | 2243 | 2244 | 2245 | 2246 | 2247 | 2248 | 2249 | 2250 | 2251 | 2252 | 2253 | 2254 | 2255 | 2256 | 2257 | 2258 | 2259 | 2260 | 2261 | 2262 | 2263 | 2264 | 2265 | 2266 | 2267 | 2268 | 2269 | 2270 | 2271 | 2272 | 2273 | 2274 | 2275 | 2276 | 2277 | 2278 | 2279 | 2280 | 2281 | 2282 | 2283 | 2284 | 2285 | 2286 | 2287 | 2288 | 2289 | 2290 | 2291 | 2292 | 2293 | 2294 | 2295 | 2296 | 2297 | 2298 | 2299 | 2300 | 2301 | 2302 | 2303 | 2304 | 2305 | 2306 | 2307 | 2308 | 2309 | 2310 | 2311 | 2312 | 2313 | 2314 | 2315 | 2316 | 2317 | 2318 | 2319 | 2320 | 2321 | 2322 | 2323 | 2324 | 2325 | 2326 | 2327 | 2328 | 2329 | 2330 | 2331 | 2332 | 2333 | 2334 | 2335 | 2336 | 2337 | 2338 | 2339 | 2340 | 2341 | 2342 | 2343 | 2344 | 2345 | 2346 | 2347 | 2348 | 2349 | 2350 | 2351 | 2352 | 2353 | 2354 | 2355 | 2356 | 2357 | 2358 | 2359 | 2360 | 2361 | 2362 | 2363 | 2364 | 2365 | 2366 | 2367 | 2368 | 2369 | 2370 | 2371 | 2372 | 2373 | 2374 | 2375 | 2376 | 2377 | 2378 | 2379 | 2380 | 2381 | 2382 | 2383 | 2384 | 2385 | 2386 | 2387 | 2388 | 2389 | 2390 | 2391 | 2392 | 2393 | 2394 | 2395 | 2396 | 2397 | 2398 | 2399 | 2400 | 2401 | 2402 | 2403 | 2404 | 2405 | 2406 | 2407 | 2408 | 2409 | 2410 | 2411 | 2412 | 2413 | 2414 | 2415 | 2416 | 2417 | 2418 | 2419 | 2420 | 2421 | 2422 | 2 |
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~~then, at the same moment, the core formation material~~  
~~is extruded to be formed into a solid cylindrical core~~  
~~member, the reflecting layer formation material is extruded~~  
~~into a belt-like reflecting layer formed on the outer~~  
~~surface of the solid cylindrical core member, the clad~~  
~~formation material is extruded into a tubular member~~  
~~covering the solid cylindrical core member and the belt-~~  
~~like reflecting layer, in a manner such that the extruded~~  
~~materials are twisted while being pulled out.~~

16. A light transmission tube according to claim 1, characterized in that the width of the belt-like reflecting layer varies so as to be different along the longitudinal direction.

17. A light transmission tube according to claim 16, wherein the belt-like reflecting layer is so formed that its width becomes gradually larger from one end of the light transmission tube (serving as a light introducing position) to an opposite end thereof, thereby ensuring a light emission from the light transmission tube with an emitted light amount being uniformly distributed in the longitudinal direction thereof.

18. A method of manufacturing a light transmission tube of claim <sup>13</sup> ~~16~~, <sup>wherein</sup> ~~characterized in that:~~

~~a multi color extrusion molding machine having three crew sections is used;~~

~~a core formation material, a clad formation material, and a reflecting layer formation material are simultaneously introduced into the extrusion molding machine;~~

~~then, at the same moment, the core formation material is extruded to be formed into a solid cylindrical core member, the reflecting layer formation material is extruded into a belt-like reflecting layer formed on the outer surface of the solid cylindrical core member, the clad formation material is extruded into a tubular member covering the solid cylindrical core member and the belt-like reflecting layer, with the <sup>an</sup> extruding amount of the reflecting layer formation material <sup>is</sup> ~~being~~ changed so as to obtain a belt-like reflecting layer having different width in the longitudinal direction of the light transmission tube.~~

19. The light transmission tube according to claim 1, wherein an outer peripheral configuration of the cross section of the tubular clad, ~~which~~ cross section is perpendicular to the longitudinal direction of the tubular clad, is a non-circular shape.

20. The light transmission tube according to claim 19, wherein the outer peripheral configuration of the cross section of the tubular clad includes at least one linear portion.

21. The light transmission tube according to claim 20, wherein the outer peripheral configuration of the cross section of the tubular clad includes at least two linear portions which are mutually perpendicular to each other.

22. The light transmission tube according to claim 20, wherein the tubular clad has a protruding member outwardly protruding in an extending direction of the linear portion.

23. The light transmission tube according to claim 20, wherein the tubular clad has a protruding member outwardly protruding in a direction perpendicular to the extending direction of the linear portion.

24. A method of manufacturing a light transmission tube of claim <sup>13</sup> ~~19~~, wherein ~~characterized in that:~~

~~a multi-color extrusion molding machine having three crew sections is used;~~

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~~a core formation material, a clad formation material, and a reflecting layer formation material are simultaneously introduced into the extrusion molding machine;~~

~~then, at the same moment, the core formation material is extruded to be formed into a solid cylindrical core member, the reflecting layer formation material is extruded into a belt-like reflecting layer formed on the outer surface of the solid cylindrical core member, the clad formation material is extruded into a tubular clad covering the solid cylindrical core member and the belt-like reflecting layer, with the outer peripheral configuration of the cross section of the tubular clad being formed into a non-circular shape.~~

25. The light transmission tube according to claim 1, wherein the tubular clad formation material contains an ultraviolet light shielding material or an ultraviolet light absorbing material.

26. The light transmission tube according to claim 25, wherein the tubular clad is made of a (meta)acryl polymer containing an ultraviolet light shielding material or an ultraviolet light absorbing material, the core section is made of a polystyrene, a polycarbonate, or a styrene-(meta)acryl copolymer, the reflecting layer is made of a

~~(meta)acryl polymer containing a white color pigment or a  
light scatterring material.~~

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